

WHAT IS CLAIMED IS:

1. A process for forming a polycrystalline silicon layer, comprising steps of:
forming at least one seed on a substrate;
forming an amorphous silicon layer on said substrate, overlying said seed;
irradiating said amorphous silicon layer with a laser to melt said amorphous silicon layer; and
recrystallizing said molten amorphous silicon layer to form a polycrystalline silicon layer.
2. The process according to claim 1 wherein said substrate is a glass substrate.
3. The process according to claim 1 wherein said substrate is a plastic substrate.
4. The process according to claim 1 wherein said laser is an excimer laser.
5. The process according to claim 1 wherein said step of forming said at least one seed on said substrate comprises sub-steps of:
forming an intermediate covering layer on said substrate;
 patterning said intermediate covering layer to define said intermediate covering layer as a specified pattern;
 forming an amorphous silicon spacer beside said specified pattern; and
 removing said specified pattern with said spacer remained.
6. The process according to claim 5 wherein said intermediate covering layer is made of silicon nitride.
7. The process according to claim 5 wherein said intermediate covering layer is made of metal.
8. A process for forming a polycrystalline silicon layer, comprising steps of:
defining a first region and a second region on a surface of a substrate;
forming at least one seed on said first region of said substrate;
forming an amorphous silicon layer on said first and said second regions of

said substrate;

irradiating said amorphous silicon layer with a laser to melt said amorphous silicon layer; and

recrystallizing said molten amorphous silicon layer on said first region to form a polycrystalline silicon layer.

9. The process according to claim 8 wherein said substrate is a glass substrate.

10. The process according to claim 8 wherein said substrate is a plastic substrate.

11. The process according to claim 8 wherein said laser is an excimer laser.

12. The process according to claim 8 wherein said step of forming said at least one seed on said first region of said substrate comprises sub-steps of:

forming an intermediate covering layer on said substrate;

patterning said intermediate covering layer to define said intermediate covering layer as a specified pattern;

forming an amorphous silicon spacer beside said specified pattern; and

removing said specified pattern with said spacer remained.

13. The process according to claim 12 wherein said intermediate covering layer is made of silicon nitride.

14. The process according to claim 12 wherein said intermediate covering layer is made of metal.

15. The process according to claim 8 further comprising a step of recrystallizing said molten amorphous silicon layer on said second region to form a microcrystalline silicon layer.

16. A process for fabricating a polycrystalline silicon layer, comprising steps of:

providing a substrate;

forming an intermediate covering layer on said substrate;

patterning said intermediate covering layer to define said intermediate covering layer as a specified pattern;

forming an amorphous silicon spacer beside said specified pattern;

removing said specified pattern with said spacer remained to form at least one seed on said substrate;

forming an amorphous silicon layer on said substrate, overlying said seed;

irradiating said amorphous silicon layer with a laser to melt said amorphous silicon layer; and

recrystallizing said molten amorphous silicon layer to form a polycrystalline silicon layer.

17. The process according to claim 16 wherein said substrate is a glass substrate.

18. The process according to claim 16 wherein said substrate is a plastic substrate.

19. The process according to claim 16 wherein said laser is an excimer laser.

20. The process according to claim 16 wherein said intermediate covering layer is made of one of silicon nitride and metal.